

**510(k) SUMMARY AND EFFECTIVENESS****1. DEVICE NAME:**

Generic Name: Magnetic Resonance Diagnostic Device  
Model Name: MRT-1504/A5  
Trade/ Proprietary Name: Vantage Titan HSR

**2. ESTABLISHMENT REGISTRATION:** 2020563**3. U.S AGENT INFORMATION:**

U.S. Agent Name: Paul Biggins  
(714) 730-5000

Establishment Name and Address: Toshiba America Medical Systems, Inc.  
2441 Michelle Drive  
Tustin, Ca. 92780

**4. MANUFACTURING SITE:**

Toshiba Medical Systems Corporation  
1385 Shimoishigami  
Otawara-shi, Tochigi 324-8550  
Japan

**5. DATE OF SUBMISSION:** November 14, 2011**6. DEVICE DESCRIPTION:**

The Vantage Titan HSR (Model MRT-1504/A5) is a 1.5 Tesla Magnetic Resonance Imaging (MRI) System. The Vantage Titan HSR uses the same magnet as the existing Vantage Titan (K080038). It includes the Toshiba Pianissimo™ technology (scan noise reduction technology). The design of the gradient coil and the WB coil of the Vantage Titan HSR provides the maximum field of view of 55 x 55 x 55 cm.

**7. SUMMARY OF MAJOR HARDWARE CHANGES**

- a. New Gradient amplifier
- b. New Gradient coil
- c. Wireless gating unit is added (optional)

**8. SUMMARY OF MAJOR SOFTWARE CHANGES**

- a. New Software platform
- b. Modified the data base for distribution correction and dB/dt calculation for new gradient coil.

**9. SAFETY PARAMETERS**

Item	New Vantage Titan HSR (Subject device)	EXCELART Vantage Titan , K080038 (Predicate Device)	Notes
Static field strength	1.5T	1.5T	Same
Peak and A-weighted acoustic noise	113.0 dB (A-weighted) 121.6 dB (peak)	105.7 dB (A-weighted) 115.7dB (peak)	Same
Operational Modes	1 <sup>st</sup> Operating Mode	1 <sup>st</sup> Operating Mode	Same
i. Safety parameter display	SAR dB/dt	SAR dB/dt	Same
ii. Operating mode access requirements	Allows screen access to 1 <sup>st</sup> level operating mode	Allows screen access to 1 <sup>st</sup> level operating mode	Same
Maximum SAR	4W/kg for whole body (1 <sup>st</sup> operating mode specified in IEC 60601-2-33(2002))	4W/kg for whole body (1 <sup>st</sup> operating mode specified in IEC 60601-2-33(2002))	Same
Maximum dB/dt	<1st operating mode specified in IEC 60601-2-33 (2002)	<1st operating mode specified in IEC 60601-2-33 (2002)	Same
Gradient coil dimensions	760 x 893 x 1405 (inner diameter x outer diameter x length, unit = mm)	760 x 893 x 1405 (inner diameter x outer diameter x length, unit = mm)	Same
Potential emergency condition and means provided for shutdown	Shut down by Emergency Ramp Down Unit for collision hazard for ferromagnetic objects	Shut down by Emergency Ramp Down Unit for collision hazard for ferromagnetic objects	Same
Biocompatibility of materials	Confirmed for electrodes and accessories for wireless gating	Not applicable	

## 10. IMAGING PERFORMANCE PARAMETERS

No change from the previous predicate submission (K080038).

## 11. INTENDED USE

The MRI system is indicated for use as a diagnostic imaging modality that produces cross-sectional transaxial, coronal, sagittal, and oblique images that display anatomic structures of the head or body. In addition, this system supports non-contrast MRA.

MRI (magnetic resonance imaging) images correspond to the spatial distribution of protons (hydrogen nuclei) that exhibit nuclear magnetic resonance (NMR). The NMR properties of body tissues and fluids are:

- Proton density (PD) (also called hydrogen density)
- Spin-lattice relaxation time (T1)
- Spin-spin relaxation time (T2)
- Flow dynamics
- Chemical shift

Contrast agent use is restricted to the approved drug indications. When interpreted by a trained physician, these images yield information that can be useful in diagnosis.

## 12. DESIGN CHANGE

The Vantage Titan HSR MRI System is comparable to the existing 1.5T Vantage Titan MRI System (K080038), with the following modifications.

- a. Maximum gradient slew rate has been changed.
- b. Power requirements have been changed.
- c. CPU platform has been changed.

## 13. SUMMARY OF DESIGN CONTROL ACTIVITIES

PS Risk List for software and hardware of changing unit have been completed and are attached. The test methods used are the same as those submitted in the previously cleared submissions (K080038). A declaration of conformity with design controls is included in this submission.

## 14. TRUTHFUL AND ACCURACY CERTIFICATION

A certification of the truthfulness and accuracy of the Vantage Titan HSR described in this submission is provided in this submission.

## 15. SUBSTANTIAL EQUIVALENCE

Toshiba Medical Systems Corporation believes that the Vantage Titan HSR (model MRT-1504/A5) Magnetic Resonance Imaging (MRI) System is substantially equivalent to the previously cleared predicate devices referenced in this submission.

Testing was done in accordance with applicable recognized consensus standards as listed below. Additionally, human volunteer studies (in Japan) were conducted to verify imaging performance.

### List of Applicable Standards

- IEC60601-1:1988, Amd.1:1991, Amd.2:1995
- IEC60601-1-1:2000
- IEC60601-1-2:2001, Amd.1:2004
- IEC60601-1-4:1996, Amd.1:1999
- IEC60601-1-6:2004
- IEC60601-1-8:2003, Amd.1:2006
- IEC60601-2-33:2002, Amd.1:2005, Amd.2:2007
- IEC60825-1: 2007
- IEC62304:2006
- IEC62366:2007
- NEMA MS-1:2008
- NEMA MS-2:2003
- NEMA MS-3:2008
- NEMA MS-4:2006
- NEMA MS-5:2003
- NEMA PS 3.1-18 (2008)



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration  
10903 New Hampshire Avenue  
Document Control Room – WO66-G609  
Silver Spring, MD 20993-0002

Toshiba Medical Systems Corporation  
Mr. Paul Biggins  
Director Regulatory Affairs/U.S. Agent  
% Toshiba America Medical Systems, Inc.  
2441 Michelle Drive  
TUSTIN CA 92780

DEC - 2 2011

Re: K112003

Trade/Device Name: MRT-1504/A5, Vantage Titan HSR  
Regulation Number: 21 CFR 892.1000  
Regulation Name: Magnetic resonance diagnostic device  
Regulatory Class: II  
Product Code: LNH  
Dated: November 14, 2011  
Received: November 15, 2011

Dear Mr. Biggins:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into class II (Special Controls), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. In addition, FDA may publish further announcements concerning your device in the Federal Register.

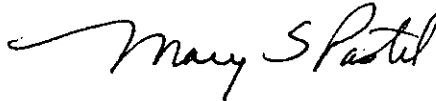
Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Parts 801 and 809); medical device reporting (reporting of

medical device-related adverse events) (21 CFR 803); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820). This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Parts 801 and 809), please contact the Office of *In Vitro* Diagnostic Device Evaluation and Safety at (301) 796-5450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to <http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm> for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address <http://www.fda.gov/cdrh/industry/support/index.html>.

Sincerely Yours,

A handwritten signature in black ink, reading "Mary S. Pastel". The signature is fluid and cursive, with a long horizontal flourish extending to the left.

Mary S. Pastel, Sc.D.  
Director  
Division of Radiological Devices  
Office of In Vitro Diagnostic Device  
Evaluation and Safety  
Center for Devices and Radiological Health

Enclosure

## Indications for Use

510(k) Number (if known): K112003Device Name: MRT-1504/A5, Vantage Titan HSR

### Indications for Use:

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Prescription Use X  
(Part 21 CFR 801 Subpart D)

AND/OR

Over-The-Counter Use \_\_\_\_\_  
(21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)



(Division Sign-Off)

Division of Radiological Devices

Office of *In Vitro* Diagnostic Device Evaluation and Safety510(k) Number 112003

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